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ABSTRACT

A fourth grade teacher in an accredited parochial school implemented and evaluated a 10-week practicum intervention designed to improve nine elementary school teachers' understanding of terminology related to thinking skills and to increase their integration of thinking skills processes into the curriculum. Thinking skills addressed were productive thinking, communication, forecasting, decision making, and planning. Technical assistance was offered in five in-service meetings. The 5-week schedule was designed to enable the modeling and evaluation of the thinking skills at each grade level. Each participating teacher received a Manual of Thinking Skill Terminology. Evaluation data indicated that practicum objectives were attained. Appendices provide survey, observation, and self-evaluation instruments, and the manual of thinking skill terminology. (RH)

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TECHNICAL ASSISTANCE AND REINFORCEMENT FOR TEACHERS IMPLEMENTING A THINKING SKILL MODEL

by

JOANNE CLARIE

A Practicum Report

submitted to the Faculty of the Center for the Advancement of Education, Nova University, in partial fulfillment of the requirements for the degree of Master of Science.

The abstract of this report may be placed in a National Database System for reference.

July 1990

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Authorship Statement

I hereby testify that this paper and the work it reports are entirely my own. When it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of other professionals in the field and in the hope that my own work, presented here, will earn similar respect.

Signed: _____
Joanne Clarie

Minor contributions of a professional character and comparable nonprofessional assistance may also be acknowledged.

Abstract

Technical Assistance and Reinforcement for Teachers Implementing a Thinking Skill Mode/
Clarie, Joanne, 1990: Practicum Report, Nova University, The Center for the Advancement of Education.
Descriptors: Handbook/ Guidelines/ Program Implementation/ Critical Thinking/ Creative Thinking/ Faculty Handbook/ Manual/ Program Implementation/ Elementary Secondary Education/

The problem of a lack of understanding of the terminology and lack of reinforcement of teachers in a thinking skill model has been addressed in this practicum.

A pre-survey and post-survey was employed to discern the needs and outcomes. A questionnaire was used to design the points that were most relevant and implemented into the in-service meetings. A teacher self-evaluation and design chart of reinforcement of lesson plans were used in integrating the thinking skills into the curriculum. Technical assistance was offered in five in-service meetings and a five week schedule was designed so modeling and evaluation of the thinking skills could be dealt with according to each grade level and teacher. Five areas of the thinking skills addressed were productive thinking, communication, forecasting, decision making and planning. The results indicated a 75 percent increase of understanding the terminology of the thinking skills model and 50 percent increase was definitely shown in the reinforcement of the thinking skill demonstrated by the booklet formed of integrated lesson plans to be shared among the teachers. Appendices include Pre-survey and Post-survey of the Thinking Skills, Questions of Terminology, Teacher Observation, Teacher Self-Evaluation, Manual of Thinking Skill Terminology, Design Chart, Sample of Thinking Skills Integrated into the Academic Context.

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CHAPTER I

PURPOSE

> "Recent national reports on the status of education in America's elementary and secondary schools have pointed to the declining quality of students' ability to think creatively and critically about ideas and issues. In spite of the fact that development of thinking skills has been a major instructional goal in American schools since the beginning of the twentieth century, there is evidence to suggest that we have miles to go and promises to keep in achieving this goal." (Costa 1981:29)

Knowledge only becomes effective when a person possesses it and it does not lie in a dormant state. Educators who say that they are meeting the needs of students by imparting mere facts can no longer say that with any confidence. (Renzulli, 1986)

This author teaches fourth grade in an accredited parochial school housing nine single grades, kindergarten through eighth. The school was established in 1964 and has a current enrollment of 218 students, comprised of 82 boys and 134 girls. From 1964 to 1988, the school had been under the direction of a religious order of educators: from 1988 until the present the school is under a lay principal. During 1964-1988, the school grew from 175 students to its present enrollment of 218 students. New buildings, including a library and a parish center, were constructed on the premises. The

parish center is not only used by the school as a cafeteria, a theater, a meeting place for scouts and youth groups, but also is used for various parish functions. This building also houses the kindergarten, which was established in 1976, as well as the art and music room for the school. In 1989, the school completed its seven year self-study accreditation and was accredited by the Florida Catholic Conference Accreditation Program. The lower grades at the school have an average enrollment of 30 or more students, two times larger than the junior high level. The school is located in an upper middle class community where many of the parents are actively involved in the school volunteer program, filling positions such as coaches, cafeteria aides, playground supervisors, clinic mothers, and office assistants.

The Home School Association is active in fund raising projects, as well as participating in community projects in the parish and school. This association raised enough money to finance a foreign language program for grades one through three and grades six through eight. In the school year 1990-1991, all grades will be included in the foreign language program, which will be taught three times each week.

Over 50 percent of the students' parents have college educations, and place a high value on their children attaining a quality education. Each faculty member has at least five or more years of experience, and four of the teachers have attained masters degrees. There are two male, full-time instructors, one male, part time instructor, and eleven female instructors. All teachers at the school are state certified.

The goal of this school has always been to prepare its students with a traditional education emphasizing religious values. The students are encouraged to take part in various activities offered during the school year such as science fairs, oratorical contests, various sports programs, choral presentations, school musicals and plays. While focusing on providing a traditional education to the students and offering a wide variety of extracurricular activities, this school has become more aware that each student leaving school, will require the development of thinking skills. As soon as a student leaves school, his initiatives, decisions and plans will be carried out at a future time where these skills will be needed and the mere sorting and resorting of knowledge will not be adequate. (de Bono, 1983) Last year, upon review of the school's seven year self-study,

the Florida Catholic Conference Accreditation Program recommended the introduction and teaching of critical thinking skills into the curricula in order to address this concern. This fourth grade teacher became interested in the development of these skills after attending a seminar on Creative and Critical Thinking. Following the seminar, the author began implementation of thinking skills into the fourth grade curriculum. Subsequently, teachers in grades one, two and three attended another seminar on thinking skills and they began to implement the model presented into their curricula. Subsequently, the teachers from grades kindergarten, five and six introduced these skills into their curricula. The author received additional training and became the coordinator of the Creative and Critical Thinking Skill process. The author has designed a terminology manual of thinking skills to assist the teachers with the continuous questions and problems that are asked related to terminology. In addition to the duties associated with classroom teaching, the author has volunteered to integrate specific creative and critical thinking skill terminologies into the entire school curricula.

PROBLEM STATEMENT

While today's students are faced with learning facts from yesterday, knowing that such knowledge must be applied in a future that is unknown, it is most essential that students develop the ability to think creatively and critically and use a process of problem solving. If this skill development occurs properly, the unknown of the future then becomes exciting and challenging rather than fearful. "The improvement of student thinking -- from ordinary thinking to good thinking -- depends heavily upon student's ability to identify and cite good reasons for their opinions." (Lipman 1988:43) In the author's school, there had been no formal process in existence to teach the development of problem-solving skills to the students. These skills were presented to the teachers who had attended an introductory seminar, but the teachers had little understanding of the specific terminologies of the thinking skills and how to utilize the terminologies to incorporate it into the curricula.

In order to organize and integrate thinking skills into the curricula, the teacher must first fully understand it. The teachers must give students specific

directions and ask questions which contain clues for a response from the student in these cognitive tasks.

The specific problem that was addressed in this practicum was the lack of understanding of the terminologies of the thinking skill process, leading to its successful incorporation into the school curricula. This problem was reflected in an initial survey sent by the author to 11 teachers who had been introduced to the thinking skill process (Appendix A:30). Nine of the surveys were returned. The teachers who returned the survey stated that they had encountered serious difficulty in both areas of understanding the language of the thinking skills and integrating them into the curricula. This fact was confirmed in two separate interviews with Dr. Deborah E. Hobbs, Ph.D., National Director of this thinking skill model associated with the National Diffusion Network in Washington, D.C. (Hobbs, 1990).

The survey consisted of the five thinking skill terminologies and understanding of each word in reference to the use of the thinking skill. The five thinking skills mentioned in the survey were: productive thinking; communication; forecasting; decision making; and planning. Also, the survey asked

if the teachers understood the attributes of the thinking skill. The attributes are those special qualities that make each thinking skill a separate entity accomplishing its task.

In addition, the survey manifested a need for reinforcement of the teacher's attitude in teaching the thinking skills.

OUTCOME OBJECTIVES

The objectives of this practicum were as follows:

1. After a 10 week implementation, the teachers were able to demonstrate a 75 percent increase in understanding and utilization of the terminology as evidenced by a post survey (Appendix A:30) and questionnaire (Appendix B:31).

2. After a 10 week implementation, the teachers demonstrated a 50 percent increase in incorporation of the thinking skill processes in the curricula as measured by classroom observation (Appendix C:32) and teacher self-evaluation (Appendix D:33).

CHAPTER II

RESEARCH AND SOLUTION STRATEGY

Since the beginning of the twentieth century, a major instructional goal in American schools has been to develop critical thinking skills. According to Renzulli, several obstacles were stated in relation to effective teaching of thinking skills. The first obstacle was a lack of consensus among educators as to what specific thinking skills should be taught. Several factors contributed to this: (a) the confusion of terms related to thinking skills; (b) the complexity and diversity of thinking skills; and (c) the inaccurate definition of thinking skills. The second problem was the lack of exactly defined skill components. Effective thinking must provide guidelines as to when and how thinking skills are to be used. The third obstacle in developing thinking skills was the attempt to teach too many skills in too short a period of time, resulting in insufficient practice and isolation of the subject matter. (Renzulli, 1986)

The final problem addressed is the measurement of thinking skills. The instruction of thinking skills is well known to educators of gifted students using materials such as Bloom's (1956) Taxonomy, Guilford's

(1956) Structure of the Intellect, and Taylor's (1967) Multiple Talent Approach to Teaching. However, in the last ten years there has been a movement for the utilization of thinking skills by educators of the regular classroom students. The result has been that many teachers are left in a confusing position. Do they choose a thinking skill model with too many choices, or choose one with too little direction? Do they choose a thinking skill that is integrated into the curricula or a separate course instruction of thinking skills? Do the teachers want critical or creative skills or do they prefer reasoning and problem solving skills. (Alvin, 1990)

In "10 Top Programs", Robert Baum (1990) states there are no easy answers to this dilemma. The teacher will find many possibilities of models, but then the question of evaluation arises. How does the teacher measure the specific components of each thinking skill? Baum suggests that a school system should first consider two basic issues:

(1) the infused curricula or separate course; and

(2) the kinds of thinking skills.

The Department of Education's National Diffusion Network has validated programs that have proven effective

effective and reflect a strong theoretical base, as well as, a successful evaluation model.

The choice of thinking skills to be taught becomes easier once the model has been chosen. Regular classroom students can develop thinking skills ability, as well as the gifted ones, if the climate is right and the thinking skill is modeled. After examining the 10 top programs, it was discovered that the training periods range from six hours to two weeks. Joyce and Showers (1980:37) focused on the analysis of how the content and depth of training contributed to learning by covering the following five separate components:

(1) presentation of theory or description of skill or strategy;

(2) modeling or demonstrating;

(3) practice in simulated and classroom settings;

(4) structured and open-ended feedback about performance;

(5) coaching for application or transfer of skills to classroom. (Joyce, 1982)

Each teacher or individual school system would need to examine the in-service activities of each program in order to meet its own special needs. The in-service training focuses on the teacher learning methods to transfer the thinking skills. Beyer (1990) suggests

that efforts to improve students' thinking skills must attend to several factors:

(1) identifying specifically the skill that is to be taught;

(2) providing direct and systematic classroom instruction in how to use these skills;

(3) devising and implementing developmental curricula that integrates the teaching of selected thinking skills with various content areas.

The author contacted the top ten Thinking Skills programs who subsequently forwarded information and outlines of the programs. Each program offered in-service training as mentioned above, as well as materials and handbooks to be given to the teachers following the seminar.

While the model the author's school system chose provided an introductory in-service training session, no formal assistance was offered immediately following the in-service. The in-service covered such points as how the thinking skills were to be infused as recommended in the curricula and the different kinds of thinking skills by Robert Baum. Also, the in-service dealt with systematic classroom instruction, identifying specific skills to be taught and implementing developmental curricula of the selected skills with content area as

recommended by Beyer. But the fine tuning of understanding the specific terminology of thinking skills or specific methods chosen to incorporate those skills into the curricula were not monitored or modeled once the in-service was completed. The design strategy for the author's practicum was to establish such training into the model chosen by the author's school.

The solution strategy offered by the practicum prevented the delays in successfully incorporating the thinking skills into the classroom. The author's strategy provided technical assistance to the teachers in the instruction of specific terminology used in addressing each of the following 5 thinking skill areas of the model used by the school: productive thinking, forecasting, communication, decision making and planning. The thinking skills were divided into five in-service meetings focusing on the manual developed by the author (Appendix E:34). The meetings were divided into parts explaining the definition of each of the thinking skills, outlining how the key words are incorporated into the curricula utilizing correct terminology. The attributes of each thinking skill were explained and how the thinking skill related to the higher order of thinking and the different tasks a child

uses in thinking such as global to specific thinking or specific to global thinking.

Following the seminars, the author visited 9 classrooms to observe the individual teacher's implementation of the thinking skill lesson and modeled a lesson whenever necessary (Appendix C:32) and offered assistance when appropriate. An additional strategy was to create a chart design (Appendix F:43) for the teachers to record examples of the thinking skill lesson that had been integrated into the curricula. This author then gathered and compiled the data in a booklet form so the teachers could share lesson plans (Appendix G:44).

During the in-service meetings and two teacher classroom evaluations, the academic skill was explained and modeled as the thinking skills were built into the curricula and developed using academic knowledge. The academic knowledge helps students gain the knowledge in many ways, while the thinking skills assist the students in processing and using knowledge to create new solutions to problems. Until the teacher can understand and convey this process, it does not become part of the curricula.

A direct result was a reinforcement of the teacher's ability and attitude in the use of the thinking skills. This resultant enhancement of the student's self-concept and more learning was manifested as the thinking skills were successfully placed into the classroom. As a student progressed through the grade, he excelled in at least one of the five thinking skills, whether it was productive thinking, communication, forecasting, planning or decision making. The attainment of one thinking skill knowledge helped the student fulfill his natural abilities. (Bobowski, 1978)

CHAPTER III

METHOD

The first week of implementation was devoted to the first thinking skill of productive thinking. A questionnaire (Appendix B:31) was given before the meeting so the author would know the specific details that needed to be addressed in the meeting. An overview of the thinking skill was presented to refresh the memory of those in the in-service training. Each teacher received a Manual of Thinking Skill Terminology (Appendix E:34) written by the author. Definitions, key words and attributes were presented, discussed and reviewed. Examples for each type of productive thinking were shown and explained how this thinking skill was integrated into the curricula. Peter Seymour's book, Karen and the Little Lost Kitten, was used as an example of locations in productive thinking. The author reviewed the behaviors (key words) and had the teachers list the many, varied and unusual places the kitten had to go to find his home. A time was scheduled for each teacher when the author would model and observe the teacher's lessons on productive thinking. During week two, a lesson was modeled and a lesson was observed using the Teacher Observation (Appendix C:32). Notes

were made noting key components such as motivation and reinforcement of the teachers' and students' attitudes which are a major part of the thinking skill process. This evaluation was used for discussion between the teacher and the author. As Bobowski (1978) stated, the student was helped to fulfill his natural ability with the cooperation of this joint educational endeavor.

The Teacher Self-Evaluation (Appendix D:33) was used by the teacher as they continued productive thinking. As a follow-up, the teacher recorded sample lessons using the Design Chart (Appendix F:43) which was compiled into a booklet form for support and reinforcement of the teachers (Appendix G:44).

TABLE 1

Partial Questionnaire of Nine Teachers on Productive Thinking Concerning the Understanding of the Thinking Skill Terminology

	Yes	No
Do I understand and use the terminology of Productive Thinking?	2	7
Transformation	3	6
Identification of Items	4	5
Strategies to Solve a Problem	3	6
Design	1	8
Topics	2	7
Locations/Sources	1	8
Functions/Recycling	3	6
Kinds of . . .	3	6

The third week of implementation was an in-service on communication terminology. Using the manual as a focus the practicum team reviewed the thinking skill. One example the researcher used was to demonstrate how a peppermint could be described starting from a group of single words, to phrases, to a network of ideas. The teachers were able to discuss this thinking skill using examples within their own curriculum. During week four, this researcher modeled and observed lessons that were scheduled and executed following the same format as in week two. Appendix F:43 and Appendix G:44 were again used to reinforce and support the teachers.

TABLE 2

Partial Questionnaire of Nine Teachers on Communication Concerning the Understanding of the Thinking Skill Terminology

	Yes	No
Do I understand and use the terminology of Communications?	3	6
How to state behavior 3? "Butterflies are beautiful as. . ."	2	7

Week five was as in-service meeting on forecasting terminology. The same format was followed as in productive thinking and communication. The author's

many examples consisted of newspaper articles such as the urgency of saving the Amazon Rain Forest. Each teacher was able to see the cause and effects of forecasting. The sixth week consisted of the scheduled modeled and observed lessons using Teacher Observation (Appendix C:32) and Self-Evaluation (Appendix D:33, Appendix F:43 and Appendix G:44).

TABLE 3

Partial Questionnaire of Nine Teachers on Forecasting Concerning the Understanding of the Thinking Skill Terminology

	Yes	No
Do I understand and use the terminology of Forecasting?	2	7
The nature of response is a happening not like a prediction of a winning of a football game?	3	6
Do you use the key words: cause or effect?	4	5

During week seven, the same appendices were used in presenting the thinking skill of decision making. This thinking skill is the most difficult and developmental to the students. Many more examples are needed and the terminology is difficult because the teacher must become accustomed to using it with students of all ages. Two

examples used were for kindergarten--choosing a sticker; for sixth grade--choosing a story's favorite character.

The eighth week followed the same procedure as the second, fourth and sixth weeks.

TABLE 4

Partial Questionnaire of Nine Teachers on Decision Making Concerning the Understanding of the Thinking Skill Terminology

	Yes	No
Do I understand and use the terminology of Decision Making?	2	7
Alternatives	1	8
Criteria	2	7
Reasons	3	6

In week nine the in-service meeting was on planning thinking skill. The same procedure was followed as in productive thinking, communication, decision making and forecasting. This particular thinking skill requires a worksheet and is discussed in detail. An example the author used was the planning of sewing a quilt patch for each student that would later be made into a large quilt. The subject matter was social studies, Florida History, demonstrating how the thinking skill is integrated into the curricula. At the conclusion of the in-service meeting, the group discussed the importance

of integrating the thinking skill into parts of the curricula.

Week ten followed the same procedure as week two, four, six and eight.

TABLE 5

Partial Questionnaire of Nine Teachers on Planning Concerning the Understanding of the Thinking Skill Terminology

	Yes	No
Do I understand and use the terminology of Planning?	3	6
The Varied Problems	4	5

The teachers requested an additional in-service meeting to share ideas of lessons and refined attributes of some of the thinking skills. Each attribute of each thinking skill consists of different and individual points. In productive thinking the skill stretches the mind and all judgment is deferred as in communication the skill is more formal and structured and closer to the formal English language in the academics area. An example of the planning attribute discussed was how the student was called upon to see a big picture and then have the ability to see the specific details. The practicum team concluded the in-service meeting

stressing the point that the thinking skills are built in and developed using academic knowledge.

Resources

This author's mentor, principal of the school, suggested the technical assistance that was offered to the nine teachers. The mentor's experience, guidance and support were invaluable. In-service and state training sessions were offered by Dr. Deborah E. Hobbs, Director of the Thinking Skills of the National Diffusion Network in Washington, D.C. There were two personal interviews and several telephone conversations. A National Certified Trainer from Mobile, Alabama, was also a resource person for me as well as a support and encouragement to the author to pursue this project. The librarian of our school allowed the use of the library for the in-service meetings. During the in-service meetings, this researcher developed overheads, chart tablets and handouts for the presentations. Questions formed throughout the first year of this researcher's teaching of the thinking skills were used as the basis for designing the manual and organizing the presentations at the in-service meetings. The resources this author used in the thinking skills were examples and projects developed in the classroom settings. These

samples are the core to understanding the terminology and integration of the thinking skills. From the in-service, training sessions, interviews, conversations, and experiences the thinking skills were refined and actually integrated into the school's curricula.

Monitoring

The consistent monitoring of progress during the implementations was done using logs. After the pre-survey and questionnaire, the needs of the in-service were established and the schedule that was set up by the practicum team was the method used to gather the data necessary to complete this practicum. The evaluations and design charts kept the team directed toward the successful completion of each thinking skill before starting a new one. A thorough job was done.

Evaluation

As the in-service meetings came to an end, the understanding of terminology was met. As the practicum team met, support and reinforcement in teaching the thinking skills were accomplished.

TABLE 6

Partial Pre-Survey Showing the Need for a Support and Reinforcement system and Activities Identified Within the Curriculum

	Yes	No
Would you like more reinforcement and support in teaching the thinking skills?	9	___
Can you identify the activities of each thinking skill within the curriculum?	4	5

The strategy of the chart design (Appendix F:43) was gathered and compiled into a booklet form to offer a support system of ideas in the teacher's lesson plans. The excitement of sharing was felt in our school and natural positive attitudes influenced the classroom. This researcher made copies of the booklet and distributed copies to each teacher. The book was in a notebook form and so that each teacher was encouraged to continue to share the ideas and plans even when this project was completed (Appendix G:44).

CHAPTER IV

RESULTS

After a 10 week implementation the teachers were able to demonstrate a 75 percent increase in understanding and use of the terminology as evidenced by the survey.

TABLE 7

A Comparison of the Responses on the Teacher Survey Used as a Pre and Post Assessment

Assessment

	March 1990 Pre		June 1990 Pre		Increase
	March 1990 Post		June 1990 Post		
Teacher	Yes Response	No Response	Yes Response	No Response	
A	1	23	21	3	83.5
B	3	21	22	2	79.1
C	4	20	23	1	79.2
D	2	22	19	5	70.8
E	5	19	22	2	70.8
F	6	18	21	3	62.5
G	1	23	22	2	87.5
H	3	21	20	4	70.8
I	0	24	22	2	91.6
TOTAL					695.8
Average Increase:					77.3

After a 10 week implementation, the teachers demonstrated a 50 percent increase in incorporating the thinking skill processes in the curricula as measured by the teacher observation (Appendix C:32) and by the self-evaluation (Appendix D:33). The results of these measurements were reflected in the compiled booklet of the teachers' design charts. This booklet is a support and reinforcement of integrated skills in the curricula (Appendix G:44).

CHAPTER V

RECOMMENDATIONS

After completion of this practicum, the teachers will have an established design chart showing the integration of the thinking skills into the curricula. This chart data will be compiled in a booklet form so that each of the teachers may share the ideas. In addition, the teachers will each have the terminology manual as a reference.

In completion of this project, the researcher's school system will use the data as a technical aid in assisting the instruction of the terminology of the thinking skill model in their school, as well as other schools. The author, as a certified trainer in the thinking skill model, will also use the outcome of this practicum as a resource in forthcoming training seminars. Each teacher attending the seminar will have the opportunity to receive a copy of the manual of the thinking skill terminology and a copy of the booklet to begin formation of their own lesson plans. Since the curricula is uniform throughout the school system, such data will be invaluable as the teacher begins implementation of the thinking skill model in the classroom. The national director of the thinking skill

model chosen by this author's school system has also requested a copy of this practicum for use as a technical aid in application of the thinking skill terminology into school curricula throughout the country. Through this communication, further enhancement of the thinking skill program is limitless.

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Appendix A

Survey of Thinking Skill

		Yes	No
1.	Do you understand the terminology of the thinking skill?	___	___
	Productive Thinking	___	___
	Transformation	___	___
	Identification of Items	___	___
	Strategies to Solve a Problem	___	___
	Design	___	___
	Topics	___	___
	Locations/Sources	___	___
	Functions/Recycling	___	___
	Kinds of . . .	___	___
	Communication	___	___
	Behavior 3	___	___
	Forecasting	___	___
	Nature of the Response	___	___
	Decision Making	___	___
	Alternatives	___	___
	Criteria	___	___
	Reasons	___	___
	Planning	___	___
	Varied Problems	___	___
2.	Do you use the key words when using the thinking skills?	___	___
3.	Do you understand the attributes of the thinking skills?	___	___
4.	Would you like more reinforcement and support in teaching the thinking skills?	___	___
5.	Can you identify the activities of each thinking skill within the curriculum?	___	___

Appendix B

Questions of Terminology

		Yes	No
1.	Do I understand and use the terminology of Productive Thinking?		
	Transformation	___	___
	Identification of Items	___	___
	Strategies to Solve a Problem	___	___
	Design	___	___
	Topics	___	___
	Locations/Sources	___	___
	Functions/Recycling	___	___
	Kinds of . . .	___	___
2.	Do I understand and use the terminology of Communications?	___	___
	How to state behavior 3? "Butterflies are beautiful as. . ."	___	___
3.	Do I understand and use the terminology of Forecasting?	___	___
	The nature of response is a happening not like a prediction of a winning of a football game?	___	___
	Do you use the key words: cause or effect?	___	___
4.	Do I understand and use the terminology of Decision Making?	___	___
	Alternatives	___	___
	Criteria	___	___
	Reasons	___	___
5.	Do I understand and use the terminology of Planning?	___	___
	The Varied Problems	___	___

Appendix C

Teacher Observation

		Yes	No
1.	Was the motivation in the thinking skill related to the context in an interesting manner?	___	___
2.	Did the teacher reinforce the student's behavior during the lesson?	___	___
	Verbal	___	___
	Non Verbal	___	___
3.	Was the teacher reinforced by the students?	___	___
	Participation of Students	___	___
	Types of Answers	___	___
4.	Did the teacher accomplish what she set out to do in a positive manner?	___	___
5.	Was the teacher's attitude accepting to the students appropriate response?	___	___

Appendix D

Teacher Self-Evaluation

		Yes	No
1.	Did I motivate the children concerning the thinking skills in a interesting manner?	___	___
2.	Did I reinforce the students behavior during the lesson?	___	___
	Verbal	___	___
	Non Verbal	___	___
3.	Was I reinforced by the students?	___	___
	Participation of students	___	___
	Type of Answers	___	___
4.	Did I accomplish what I set out to do in a positive manner?	___	___
5.	Was my attitude accepting to the student's appropriate response?	___	___

APPENDIX E

MANUAL OF THINKING SKILL TERMINOLOGY

1. OVERVIEW

2. PRODUCTIVE THINKING TALENT

3. COMMUNICATION TALENT

4. FORECASTING TALENT

5. DECISION MAKING TALENT

6. PLANNING TALENT

7. ACADEMIC TALENT

1

OVERVIEW

- The teachers recognize that children are multiple talented. There are different ways of being smart which are related to the world-of-work.
- Each different thinking skill can function in acquiring knowledge across all subject areas which grow in knowledge.
- The successes of the student thinking skills will enhance the student's self-concept and enable him to achieve more.
- Thinking skill model is based in academic skill and five other thinking skills: productive thinking, decision making, planning and forecasting and communication.

2

PRODUCTIVE THINKING SKILL

Definition:

° To generate many, varied and unusual ideas or solutions and to add detail to the ideas to improve or make them more interesting. (Schlichter, 1981)

Key Word:

° Unusual, many, varied.

Attributes:

° To stretch the mind and have responses that list ideas that are unusual. Unusual means that which happens least frequently, not weird or strange.

° Four skills involved are based on Torrances (1967) creativity factors: fluency, flexibility, originality and elaboration.

° Deferred judgement is a critical element of productive thinking.

° The ideas may take a variety of activities:

- Transformation
- Functions/Recycling
- Designs
- Topics
- Strategies to Solve a Problem
- Locations/Sources
- Kinds of Identification of Items

3

COMMUNICATION THINKING SKILL

Definition:

- To use and interpret both verbal and nonverbal forms of communication to express ideas, feelings and needs to others. (Schlichter, 1981)

Key Words:

- Single, understand, feelings, phases

Attributes:

- Closest to academic skill using words, phases and complete thoughts. Each activity is a separate entity, but may be built upon each other (words to phases, phases to complete thoughts).

- Focuses on the more standard structure and use of English language. Fluency and flexibility in the use of the language are the major goals, but form, clarity, expressiveness and completeness of ideas are supporting goals.

4

FORECASTING TALENT

Definition:

- To make a variety of predictions about the possible causes and/or effects of various phenomena. (Schlichter, 1981).

Key Words:

- Predictions.

Attributes:

- Easiest to introduce to children because the children are naturally curious.
- It is not like asking the outcome of a football game.
- The implementation is asking what are the varied effects of a situation as well as the varied causes of a situation.

5

DECISION MAKING TALENT

Definition:

- To outline, weigh, make final judgment, and defend a decision on the many alternatives to a problem. (Schlichter, 1981)

Key Words:

- Alternatives, criteria, decisions, reasons.

Attributes:

- Complex thinking skill and it is developmental for each student.
- Picking an act is not a decision, but thinking about the choices (alternatives) is decision making.
- Sources for alternatives are generated from: teacher, students together, small groups, or individual students.
- Sources for criteria (thinking of questions about the alternatives) are generated from: teacher, total groups adds to criteria, small groups adds to the criteria, teacher and individual adds to the criteria and student generates criteria alone.

6

PLANNING TALENT

Definition:

- To design a means for implementing an idea by describing what is to be done, identifying the resources needed, outlining a sequence of steps to take, and listing possible problems in the plan. (Schlichter, 1981)

Key Words:

- What, materials and equipment, steps and problems.

Attributes:

- Planning usually follows all other thinking skills and uses all the thinking skills. It is developmental for the child.
- Planning calls for skills in forming the big picture and the ability to see the specific details.
- Can be used with total class as well as integrating it into the subject areas using individual worksheets for planning.

7

ACADEMIC TALENT

Definition:

- To develop a base of knowledge and skill about a topic or issue through acquisition of information and concepts. (Schlichter, 1981)

- Taylor's multi talents are build in and developed using academic talent or knowledge.

- Traditional academic talent helps students gain knowledge in many ways, while the other five talents assist students in processing and using knowledge to create new solutions to problems.

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Appendix F

Design Chart

Integrating Thinking Skill Into The Academic Context

Level (circle one): Primary Intermediate Junior High

I. Thinking Skill Talent

_____

II. Academic Context

_____

III. Responses

_____

IV. Type of Media Used

_____

V. Comments

_____

Appendix G

Samples of Support and Reinforcement Booklet of Ideas and Lesson Plans of the Thinking Skill

INTEGRATING THINKING SKILLS INTO
THE ACADEMIC CONTEXT

Level (circle one): Primary Intermediate Junior High

I. Thinking Skill Talent - I used three talents:

1. Productive Thinking - generated ideas for a poem.

2. Decision Making - listed five ideas and used a worksheet to make student's own decision.

3. Planning - used a worksheet and planned how the student's poem would be presented.

II. Academic Context - Language Arts/Poetry.

III. Responses - verbal to each child (i.e. nice job, etc.).

IV. Type of Media - chalkboard for Productive Thinking and construction paper for Concrete and Haiku poems.

V. Comments - worked well. It especially worked with Haiku and Concrete poems.

INTEGRATING THINKING SKILLS INTO
THE ACADEMIC CONTEXT

Level (circle one): **Primary** Intermediate Junior High

I. Thinking Skill Talent - Communication Behavior 6.

II. Academic Context - Social Studies. The poem "Whatever Shall I Be?"

WHATEVER SHALL I BE?

When I grow up, I'd like to be
The captain of a ship at sea,
Or pilot jets to far away
And bring them back another day.

Perhaps I'd rather tell the news
And do important interviews,
Write songs or books or poems or plays
Or dance in beautiful ballets.

I could be a detective who catches thieves,
Or a gardener fine who rakes great piles of leaves,
A plumber, a drummer, a daring sky diver,
A mayor, bricklayer or taxicab driver...

An astronaut brave who rockets so high,
Or a master chef who is known for his pie,
A florist, a seamstress, a doctor, a farmer,
A basketball player or a famous snake charmer.
How will I decide just what I will be?
There are so many jobs . . . which one is for me?
Someday I will know, and I'll choose my own,
But today I'll just dream what I'll be when I'm grown.

They pantomimed what they feel they might want to be.

III. Responses - quietly taking their turns.

IV. Type of Media Used - poem.

V. Comments - children were very clever. They pantomimed a soccer play, an astronaut, a gymnast, a dancer, a surfer, a nintendo player, a sky diver, a basketball player.

INTEGRATING THINKING SKILLS INTO
THE ACADEMIC CONTEXT

Level (circle one): Primary **Intermediate** Junior High

I. Thinking Skill Talent - Forecasting.

II. Academic Context - Science/Social Studies. The Dinosaurs walked under water in Florida centuries ago. What do you think caused Florida to become the peninsula it is today?

III. Responses - oral and praised appropriate answers.

IV. Type of Media Used - chalkboard.

V. Comments - The children were able to share many ideas and come to the scientific reason.

INTEGRATING THINKING SKILLS INTO
THE ACADEMIC CONTEXT

Level (circle one): **Primary** Intermediate Junior High

I. Thinking Skill Talent - Productive Thinking.

II. Academic Context - Language/Arts. Designing folders for the week's work "Summertime."

III. Responses - Children responded with many varied and unusual ideas. There was relevant praise of flexible, original thinking.

IV. Type of Media Used - crayon and paper.

V. Comments - Children produced folders with many, varied and unusual ideas. We had bike riders, surfers, pirate ships, parachute people, and volleyball players.